

We claim:

1. A method comprising:
advancing media sheets through an image-forming device such that each of
a plurality of successive pairs of the media sheets are advanced at least
5 substantially adjacent to one another;
transmissively optically sensing a leading edge of each of the media sheets
and a lagging edge of each of the media sheets; and,
detecting occurrence of an out-of-media sheets situation where a length of
time after the lagging edge of one of the media sheets has been optically
10 sensed exceeds a threshold length of time.
2. The method of claim 1, wherein advancing the media sheets through the
image-forming device comprises, for each successive pair of the media sheets:
advancing a first media sheet through the image-forming device; and,
advancing a next media sheet through the image-forming device such that a
15 leading edge of the next media sheet is advanced at least substantially adjacent
to a lagging edge of the first media sheet.
3. The method of claim 2, wherein advancing the next media sheet through the
image-forming device comprises advancing the next media sheet through the
image-forming device such that the leading edge of the next media sheet
20 minimally overlaps the lagging edge of the first media sheet by less than a
threshold.
4. The method of claim 2, wherein advancing the next media sheet through the
image-forming device comprises advancing the next media sheet through the
image-forming device such that a gap between the leading edge of the next
25 media sheet and the lagging edge of the first media sheet is minimized.

5. The method of claim 1, wherein advancing the media sheets through the image-forming device such that each pair of the plurality of successive pairs of the media sheets are advanced at least substantially adjacent to one another maximizes speed of advancement of the media sheets through the image-forming device.
6. The method of claim 1, wherein transmissively optically sensing the leading edge of each of the media sheets comprises:
- emitting light incident to a first side of the media sheets being advanced;
 - detecting the light transmitted through the media sheets being advanced
- 10 from a second side of the media sheets opposite to the first side thereof; and,
- in response to determining that a level of the light changes from a first value to a second value different than the first value and then back to the first value, concluding that the leading edge of one of the media sheets has been located.
7. The method of claim 1, wherein detecting occurrence of the out-of-media sheets situation comprises:
- emitting light incident to a first side of the media sheets being advanced;
 - detecting the light transmitted through the media sheets being advanced
- 15 from a second side of the media sheets opposite to the first side thereof; and,
- in response to determining that a level of the light remains at a second value
- 20 for longer than the threshold length of time after having changed from a first value less than the second value, concluding that the out-of-media sheets situation is occurring.
8. The method of claim 1, further comprising transmissively optically sensing a multiple-media sheet pick-up situation occurring.
9. The method of claim 8, wherein transmissively optically sensing the multiple-media sheet pick-up situation occurring comprises:
- emitting light incident to a first side of the media sheets being advanced;
 - detecting the light transmitted through the media sheets being advanced

from a second side of the media sheets opposite to the first side thereof; and,
in response to determining that a level of the light remains at a second value
for longer than a threshold length of time after having changed from a first value
greater than the second value, concluding that the multiple-media sheet pick-up
5 situation has occurred.

10. The method of claim 8, wherein transmissively optically sensing the multiple-
media sheet pick-up situation occurring comprises:

emitting light incident to a first side of the media sheets being advanced;
detecting the light transmitted through the media sheets being advanced
10 from a second side of the media sheets opposite to the first side thereof;
determining a length of time threshold at which a level of the light remains at
a first value after having changed from a second value greater than the first
value and before changing to one of the second value and a third value less
than the first value; and,
15 in response to determining that the level of the light thereafter remains at the
first value for a length of time substantially shorter than the length of time
threshold, concluding that the multiple-media sheet pick-up situation has
occurred.

11. A sensor assembly for an image-forming device comprising:

20 a light source to emit light through media sheets as the media sheets are
advanced through the image-forming device, each pair of a plurality of
successive pairs of the media sheets being advanced through the device such
that a leading edge of a second media sheet of the pair closely follows a lagging
edge of a first media sheet of the pair;
25 a transmissive optical sensor to detect the light emitted through the media
sheets as the media sheets are advanced through the image-forming device;
and,
a controller to determine occurrence of an out-of-media sheets situation
where a length of time after the lagging edge of the first media sheet of one pair
30 of the plurality of successive pairs of the media sheets has been detected,

based on changes in the light as detected by the transmissive optical sensor, exceeds a threshold length of time.

12. The sensor assembly of claim 11, wherein the controller is further to determine a location of the leading edge of the second media sheet of each pair of the plurality of successive pairs of the media sheets based on changes in the light as detected by the transmissive optical sensor.

13. The sensor assembly of claim 12, wherein the controller determines the location of the leading edge of the second media sheet of each pair of the plurality of successive pairs of the media sheets by determining that a level of the light increases from a first value to a second value and then decreases back to the first level, corresponding to a small gap between the lagging edge of the first media sheet and the leading edge of the second media sheet.

14. The sensor assembly of claim 13, wherein the controller further determines a location of the lagging edge of the first media sheet of each pair of the plurality of successive pairs of the media sheets when determining that the level of the light increases from the first value to the second value, such that a length of the first media sheet is determined.

15. The sensor assembly of claim 12, wherein the controller determines the location of the leading edge of the second media sheet of each pair of the plurality of successive pairs of the media sheets by determining that a level of the light decreases from a first level to a second level and then increases back to the first value, corresponding to a slight overlap between the lagging edge of the first media sheet and the leading edge of the second media sheet.

16. The sensor assembly of claim 15, wherein the controller further determines a location of the lagging edge of the first media sheet of each pair of the plurality of successive pairs of the media sheets when determining that the level of the

light increases back to from the second value to the first value, such that a length of the first media sheet is determined.

17. An image-forming device comprising:

an image-forming mechanism to form images onto media sheets;

5 a media-advancement mechanism to advance the media sheets through the image-forming mechanism for image formation thereon, such that for each pair of a plurality of successive pairs of the media sheets, a leading edge of a second media sheet of the pair closely follows a lagging edge of a first media sheet of the pair; and,

10 a transmissive optical sensor assembly to determine a location of the leading edge of the second media sheet and a location of the lagging edge of the first media sheet of each pair of the plurality of successive pairs of the media sheets, based on changes in light transmitted through the media sheets as the media sheets are advanced through the image-forming mechanism, and to detect an
15 out-of-media sheets situation occurring, and to detect a multiple-media sheet pick-up situation occurring where a length of time after the lagging edge of one of the media sheets has been optically sensed exceeds a threshold length of time.

18. The image-forming device of claim 17, wherein the image-forming

20 mechanism is an inkjet-printing mechanism, such that the image-forming device is an inkjet-printing device.

19. The image-forming device of claim 17, wherein the transmissive optical sensor assembly comprises:

25 a light source to emit light through the media sheets as the media sheets are advanced through the image-forming mechanism for image formation thereon; and,

a transmissive optical sensor to detect the light emitted through the media sheets as the media sheets are advanced through the image-forming mechanism for image formation thereon.

20. An image-forming device comprising:

an image-forming mechanism to form images onto media sheets;

a media-advancement mechanism to advance the media sheets through the image-forming mechanism for image formation thereon, such that for each pair of a plurality of successive pairs of the media sheets, a leading edge of a second media sheet of the pair closely follows a lagging edge of a first media sheet of the pair; and,

means for determining a location of the leading edge of the second media sheet and a location of the lagging edge of the first media sheet of each pair of the plurality of successive pairs of the media sheets, based on changes in light transmitted through the media sheets as the media sheets are advanced through the image-forming mechanism, and for detecting an out-of-media sheets situation occurring where a length of time after the lagging edge of one of the media sheets has been detected exceeds a threshold length of time.